



**Rancho
California
Water
District**

Identifying and Reducing Water Loss through the Establishment of a District Metered Area

**Submitted for Bureau of Reclamation's
WaterSMART Grants: Small-Scale Water Efficiency Projects
FY 2018**

July 30, 2018

Rancho California Water District
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Identifying and Reducing Apparent Water Loss through the Establishment of a District Metered Area

Table of Contents

<u>APPLICATION CONTENT</u>	<u>PAGES</u>
SF-424 Application Cover Page submitted via grants.gov	
SF-424 Application for Federal Assistance submitted via grants.gov	
SF-424C Budget Information – Construction submitted via grants.gov	
SF-424D Assurances submitted via grants.gov	
Title Page	1
Table of Contents	2
I. Technical Proposal & Evaluation Criteria	3
A. Executive Summary	3
B. Background Data.....	3
C. Project Location	6
D. Technical Project Description	6
E. Evaluation Criteria	8
II. Project Budget.....	11
A. Funding Plan & Letters of Commitment.....	11
B. Budget Proposal	12
C. Budget Narrative	12
D. Total Costs	15
III. Environmental & Cultural Resources Compliance.....	15
IV. Required Permits or Approvals	15
V. Official Resolution.....	15
VI. Unique Entity Identifier and System for Award Management	15
VII. Letters of Project Support	16

I. Technical Proposal & Evaluation Criteria

A. Executive Summary

July 30, 2018

Rancho California Water District

Temecula, Riverside County, California

Project Summary

The Proposed Project will create a District Metered Area (DMA) within a portion of Rancho California Water District's (RCWD/District) service area. The DMA will function as a permanent water loss control system, which will be established by isolating a discrete section of RCWD's distribution system for monitoring the quantities of water entering and leaving the section. The future location of the DMA has already been selected based on its historic susceptibility to water metering issues and subsequent water loss. In general, work performed for the Proposed Project includes:

- 1) Installing two new production meters for measuring water quantity entering the DMA,
- 2) Quantifying water loss by comparing that quantity of water to the total amount of water leaving the DMA through customer meters,
- 3) Using customized software to help identify and locate sources of water loss within the DMA,
- 4) Mitigating those sources of water loss through replacement of traditional customer water meters with technologically advanced, ultrasonic meters, and
- 5) Demonstrating benefits of the DMA to other water agencies during public meetings.

The Reclamation portion of the Proposed Project budget will be used to pay for the cost of the two production meters, and sixty ultrasonic customer meters. The District's portion of the budget will pay for the RCWD staff time required for remaining activities associated with Proposed Project implementation. The Proposed Project contributes to Reclamation's goal of implementing water management efforts that lead to more efficient use of water supplies in the western United States. The Proposed Project will start on January 1, 2019, and will end December 31, 2020 with a Final Project Report submitted to Reclamation 90 days later on March 30, 2020. The Proposed Project is not on Reclamation lands and does not involve Reclamation facilities. However, the Proposed Project does reside in the Colorado River Basin and a large portion of the water used in the Proposed Project Area is imported through the Colorado River Aqueduct (Reclamation project water). Water conserved through implementation of the Proposed Project would remain at the source, in large part the Colorado River, to create a more sustainable water supply in the River for beneficial uses.

B. Background Data

Water Supply Sources & Quantities

RCWD obtains water from the following primary water sources: imported State Water Project (SWP) water from the California Bay-Delta, imported Colorado River water from the through the Colorado River Aqueduct (CRA), local groundwater from the Temecula Valley Groundwater Basin, and recycled water from both District and EMWD. On average, RCWD supplies approximately 65,000 acre feet per year. While a significant portion of this supply originates in the Temecula Valley and Wolf Valley Groundwater Basins, which RCWD manages, the majority is imported from the CRA and SWP.

Water Rights

After several legal judgements and decrees were issued over the course of more than sixty years directing the use and allocation of groundwater in the Temecula Valley Groundwater Basin, a settlement agreement, was reached and executed in March 2002. This agreement, the "*Cooperative Water Resource Management Agreement between Camp Pendleton and Rancho California Water District*" remains in

place today to govern water flow in the Santa Margarita River and use of the Murrieta-Temecula Basin. Also, in December 2006, a ‘Groundwater Management Agreement between Rancho California Water District and the Pechanga Band of Luiseno Mission Indians’ was executed to govern the management of groundwater in the Wolf Valley Groundwater Basin in a manner not to exceed the safe yield that protects groundwater resources in the that Basin. The District also receives imported water from both the CRA and SWP through Metropolitan Water District. Lastly, 4,400 AFY of recycled water is produced in the RCWD service area.

Current Water Uses & Users

RCWD provides water for urban and agricultural uses for these types of water consumers: Single-Family Residential, Multi-family Residential, Commercial, Industrial, Institutional and Governmental, Dedicated Landscape, Agricultural, and Agricultural/Residential. At this time, RCWD serves approximately 148,000 people through ~44,000 water connections.

Current & Projected Water Demand

During Fiscal Year 2014/15, total water demand was 65,279 acre-feet. Projected future water demands are shown in the following table for every five years beginning in 2020 and until the year 2040.

Use Type	Projected Water Use				
	2020	2025	2030	2035	2040
Single Family Residential	28,870	30,062	31,253	32,443	33,774
Multi-Family Residential	2,511	2,615	2,718	2,822	2,937
Commercial	3,871	4,031	4,190	4,350	4,529
Institutional	528	550	571	593	618
Dedicated Landscape	6,389	6,653	6,916	7,180	7,474
Agricultural Irrigation	25,217	26,258	27,298	28,338	29,501
Sales/Transfers/Exchanges to	6,781	9,278	9,278	9,278	9,278
Losses	3,391	3,531	3,671	3,811	3,967
Other	85	89	93	96	100
Wetlands or Wildlife Habitat	2	0	0	0	0
TOTAL	77,645	83,067	85,988	88,911	92,178

Major Crops and Total Acres Served

Typical agricultural uses include major crops of avocados, citrus, and winegrapes, totaling approximately 9,127 irrigated-acres, or approximately 10 percent of the District’s service area.

Potential Shortfalls in Water Supply

The reliability of the District’s water supply is largely dependent on the reliability of its imported water supplies, which are delivered by MWD through the SWP and CRA. On April 14, 2015, Metropolitan announced a reduction in deliveries due to a fifth consecutive year of drought in California and in response to new State of California Regulations. Even though that reduction has been temporarily lifted, the long-term reliability of RCWD’s imported supplies is still questionable due to the state’s extreme variability in yearly precipitation, and ongoing drought within the Colorado River Watershed. Furthermore, while imported supplies have temporarily recovered, the District’s local supplies have not improved since the recent five-year drought. In fact, water levels within the local groundwater basin have dropped to historic lows. At this point, the District compensates for reduced local supplies through expensive imported water purchases and conservation efforts such as the Proposed Project.

Description of Water Supply Facilities/Distribution System

RCWD receives its imported water (treated and untreated) directly through six Metropolitan water turnouts, three in EMWD’s service area and three in WMWD’s service area. The District also pumps local groundwater from 48 district wells and provides recycled through its Santa Rosa Water Reclamation Facility (SRWRF) and EMWD’s Temecula Valley Water Reclamation Facility. From these sources, RCWD distributes water through about 900 miles of water pipelines. Water is then delivered to both municipal and agricultural customers through approximately 44,000 water meters, which are connected to an automated metering infrastructure and are monitored using wireless telemetry. RCWD owns and operates 37 storage reservoirs and one surface reservoir, Vail Lake. Current reservoir tank storage is 138.1 million gallons (MG), and the storage capacity of Vail Lake is 49,000 AF. RCWD has also implemented a reclaimed storage pond system, which allows the ability to convey water back to the treatment facility for supplemental treatment or pumping directly to the distribution system. Current pond storage capacity is in excess of 737 AF.

Past Working Relationships with Reclamation

Date	Description of Relationship	Project Description
2017	Entered into \$47,400 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Developed written water management plan for improving water pricing structure for agricultural and commercial customers
2016	Entered into \$79,204.70 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Integrated three water conservation devices at five landscape irrigation sites for increasing irrigation efficiency
2016	Entered into \$1,000,000 Agricultural Water Conservation and Efficiency Grants Fostering District/Farmer Partnerships Agreement	Provides financial incentives to farmers for replacing high water use crops with lower water use varieties.
2014	Entered into a \$298,677 Bay-Delta Restoration Program: CALFED Water Use Efficiency Grant Agreement	Upgraded water meters to AMI Itron 100W Choice Connect network System, which automatically collects and stores hourly consumption data
2013	Entered into \$54,681 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Developed blueprint for water use efficiency, to provide direction on programs to meet District’s water efficiency goals
2012	Entered into \$55,000 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Implemented cost-effective outdoor water use efficiency measures in residential landscapes
2012	Entered into \$174,192 Bay Delta Restoration Program: Agricultural Water Conservation and Efficiency Grant Agreement	Promoted on-farm water use efficiency, building upon an existing Program to provide farmers with tools for scheduling irrigation events more accurately and effectively
2012	Entered into \$150,000 WaterSMART: Title XVI Water Reclamation and Reuse Program Agreement	Completed Vail Lake Indirect Potable Reuse Conceptual Design Study
2009	Entered into \$6,100,000 American Recovery and Reinvestment Act (ARRA) Agreement	Completed Vail Lake Stabilization and Conjunctive Use Project
2009	Entered into \$260,440 CALFED Water Efficiency Grant Agreement	Targeted 500 high water use residential customers for on-site evaluations to identify and mitigate water waste

2008	Entered into \$100,000 Soil and Moisture Conservation Program Grant Agreement	Funded a study demonstrating that smart irrigation controllers can provide water savings while maintaining crop integrity and fruit production for avocado growers
2007	Entered into \$87,500 Water 2025: Preventing Crisis and Conflict in the West, Challenge Grant Agreement	Extended an ongoing smart irrigation controller direct install program for commercial and residential water users

C. Project Location

The location of the Proposed Project is in the state of California, Riverside County, within RCWD’s service area. RCWD’s service area is 85 miles southeast of the City of Los Angeles, 40 miles south of the City of Riverside and 65 miles north of the City of San Diego, within Reclamation’s Lower Colorado Region. Figure 1 shows the location of the Proposed Project.

D. Technical Project Description

Proposal Narrative & Work Plan

According to American Water Works Association’s (AWWA) manual *M36: Water Audits and Loss Control Programs*, water utilities should ensure wise use of available water resources and equitable recovery of revenue by conducting regular water audits and implementing effective metering programs, which rely on periodic performance testing, repair, and maintenance of all water meters.

Consistent with this concept, Rancho California Water District (RCWD/District) has developed a Revenue Protection Program (RPP), which focuses on maintaining high levels of meter accuracy. The primary objectives of RPP are to avoid water loss, protect and recover District revenue, protect the District’s metering assets, and evaluate the District’s meter replacement requirements and timelines

RPP has proven to be a valuable tool in reducing apparent water loss within RCWD’s water delivery system. The success of RPP is attributed to the development of a customized SmartWorks software (SmartWorks) and its integration with RCWD’s existing automated metering infrastructure (AMI). The integration of these tools allows RCWD to discover anomalies in water consumption trends for every customer water meter within the District’s service area and to identify and replace those that provide inaccurate data. Using the District’s AMI data, SmartWorks helps identify and locate malfunctioning water meters by analyzing historical water consumption trends, comparing actual water consumption to site-specific water requirements, analyzing water meter proximity to distribution system repairs, and comparing actual meter flow rates to manufacturers’ recommended flow rates.

The majority of malfunctioning customer meters discovered through RPP implementation were found to have been providing consumption data that was lower than actual consumption. Since RCWD did not charge customers for all water delivered, the District experienced revenue losses, which led not only to customer inequities, but also to higher water rates for all District customers. In its first year of implementation, RPP identified and replaced over 100 malfunctioning meters, protecting millions of dollars in District revenue. In addition, RPP has proven to be a valuable water conservation program.

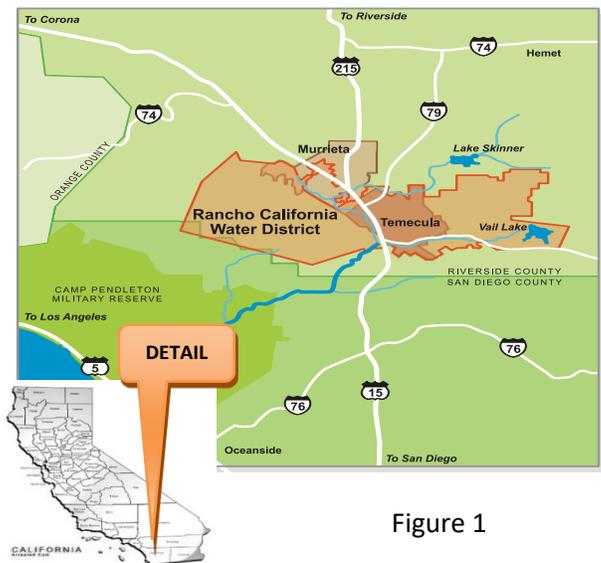


Figure 1

The District has found that customers with under-reporting meters consume significantly more water when they are not being accurately billed for it. In one instance, after a malfunctioning meter was replaced, it was found that the customer was actually consuming eight times as much water as they had used prior to the meter malfunction. Once the meter was replaced with more advanced technology, the customer's consumption returned to normal. To date, the District estimates the RPP has achieved over 200 acre-feet of water savings per year. Other benefits of RPP include uncovering valuable information as to what are the common causes of meter degradation/failure in RCWD's service area and where it is likely to occur in the future, which will help the District to reconsider its policies and practices for asset management.

The Proposed Project represents an enhancement to the RPP, which leads to better protection of revenue and additional water conservation. Through the establishment of a District Metered Area (DMA), the Proposed Project will create a permanent water loss control system by isolating a discrete area of RCWD's distribution system for the purpose of monitoring the quantities of water entering and leaving the area. Once the DMA is established, the existing SmartWorks software can be used to identify and locate malfunctioning meters within the area. Malfunctioning meters will then be replaced with the latest in ultrasonic metering technology, which has been field tested by the District and has been proven to be more accurate, during bench testing, than currently installed turbine and positive displacement meters. The District's field testing efforts have also proven that the ultrasonic meters provided higher accuracy at all flows and were less susceptible to damage from debris or wear and tear.

The area where the DMA will be established has already been selected based on its historical susceptibility to water metering issues and subsequent water loss. The area chosen for the DMA was carefully selected based on its undulating topography (i.e. steep terrain and highly variable elevations), water pressure control challenges (i.e. high pressures), high flows and water consumption among customers residing within the area, and recurring incidence of catastrophic customer meter failure.

In general, work performed for establishing the DMA includes installing two new production meters for measuring the quantity of water entering the area, comparing that quantity to the quantity sold to customers residing within the area, and using SmartWorks software to help identify, locate, and repair sources of water loss. Specifically, work required for Proposed Project implementation includes:

1. Evaluation of DMA

RCWD staff will evaluate the pre-selected DMA to determine the best locations where the two new production meters will be installed.

2. Production Meter Installation Planning

RCWD staff will plan the installation process with an emphasis on minimal water delivery interruption to customers.

3. Execution of Production Meter Installation

RCWD staff will isolate the DMA through a process of strategic valve closures. Once isolated, the production meters will be installed. During this process, the District's water quality and distribution teams will be required to assess the area and mitigate any pressure or quality changes.

4. Quantify Water Loss

Using the two new production meters in conjunction with the District's existing Automated Metering Infrastructure (AMI), District staff will measure the amount of water delivered to the DMA through the production meters, and compare it to the amount of water delivered to each water end-user residing within the DMA through existing customer meters. The difference between the two measurements will represent total water loss within the DMA, which RCWD staff will attempt to minimize.

5. Deployment of Software

District staff will use the SmartWorks software for identifying and locating malfunctioning water meters within the DMA.

6. Replace Customer Meters with New Ultrasonic Metering Technology

RCWD staff anticipates that the Proposed Project will result in the identification of a great number of malfunctioning meters within the DMA. It is reasonable to expect that the District will replace at least sixty malfunctioning customer meters. These existing, traditional meters will be replaced with more accurate, ultrasonic metering technology.

7. Public Demonstration

RCWD staff will develop materials including a summary report and a PowerPoint presentation to be used for demonstrating to neighboring and regional water agencies the benefits of the Proposed Project during a workshop.

For RCWD, implementation of the Proposed Project is essential for protecting revenue and conserving its water resources. As water systems continue to age and the state of California is trending towards further regulation of water losses, a proactive approach to water loss detection and asset management benefits RCWD not only in terms of revenue protection and water conservation, but also in terms of modernizing its infrastructure to achieve regulatory compliance.

E. Evaluation Criteria

Project Benefits

The Proposed Project represents the modernization of RCWD's infrastructure through the establishment of a DMA (a permanent water loss control system), and replacement of old water metering equipment with the newest and most accurate ultrasonic metering technology. This modernization effort will lead to water management benefits including reduced water demand and minimized water loss/waste, and public benefits resulting from the protection of District revenue. By providing customers with more accurate water consumption data and accurate billing information, not only will customer water consumption fall back in line with what is considered reasonable use, but also, recovery of District revenue will ensure equitable distribution of water and energy costs and keep water rates low for all RCWD's customers. Moreover, through implementation of the Proposed Project's Task 9: Public Demonstration, the project benefits will be communicated to neighboring and regional water agencies who could consider adopting similar practices. This increased collaboration and information sharing among regional water managers has the potential to extend the project benefits throughout the state of California. In addition, the Proposed Project compliments work currently being conducted by NRCS within RCWD's service area. Since 2012, NRCS has provided hundreds of thousands of dollars in financial assistance to local farmers with water conservation and improving on-farm efficiency through implementation of irrigation technologies and best management practices.

Planning Efforts Supporting the Project

The Proposed Project shares Reclamation's goals for improving local and regional water supply reliability through water conservation efforts that are outlined in RCWD's Blueprint for Water Use Efficiency (Blueprint) and the Upper Santa Margarita Watershed's Integrated Regional Water Management Plan (IRWMP). Furthermore, these local and regional Plans are both consistent with the California Water Plan (CWP) and its roadmap for good water management. RCWD's Blueprint functions as the District's Water Conservation Plan. The main goals for the development of this document were to analyze the District's existing water conservation efforts and to identify additional or enhanced projects the District should implement to achieve long-term water use efficiency within the District's service area. Efforts recommended

in the document, which will be addressed through Proposed Project implementation, pertain to the improving District-wide water use efficiency. Of the IRWMP’s five main objectives, the first is to improve regional water supply reliability by reducing imported water dependency through conservation and local supply development. Water conservation efforts mentioned in the document that will be supported as part of the Proposed Project include using technology to decrease overall water demand. The CWP encourages the practice of integrated regional water management for ensuring water supply reliability. The CWP also outlines California Senate Bill x7-7 legislation, which was enacted in 2009 to require the State to achieve a 20% reduction in per capita water use by the year 2020. To achieve this reduction, the State recommends use of technology for enhancing water conservation. The Proposed Project will help RCWD comply with this State legislation since it includes infrastructure modernization designed to reduce water waste.

Project Implementation

The Proposed Project will be implemented through completion of nine specific tasks, which will begin on January 1, 2019, and will end December 31, 2020, with a Final Project Report submitted to Reclamation within 90 days thereafter on April 1, 2021. The following table includes detailed information regarding each of the nine tasks along with Proposed Project timing information.

Proposed Project Tasks

Task	Planned Start Date	Planned Completion Date
Task 1: Project Administration Execute a Financial Assistance Agreement with Reclamation, and prepare and submit invoices. Deliverables: invoices and other documentation as required per the Financial Assistance Agreement.	1/1/19	4/1/21
Task 2: Reporting Report to Reclamation on project accomplishments. Deliverables: program performance reports to be submitted as required per the Financial Assistance Agreement.	1/1/19	4/1/21
Task 3: Evaluate DMA Evaluate the selected DMA to determine the locations that District meters will be installed. District engineers, water distribution operators, and water quality specialists will base the determination upon evaluation of the distribution system. Deliverables: a map of the selected area.	1/1/19	2/28/19
Task 4: Plan for Production Meter Installation Plan the installation process with an emphasis on minimal water delivery interruption to customers. Installation planning will require coordination between the construction team, water distribution operators, meter team, and the administration department. Deliverables: Installation plan	3/1/19	4/30/19
Task 5: Install Production Meters Install new District production meters. Once the DMA is isolated, water quality and distribution teams will be required to assess the area and mitigate any pressure or quality changes. Every effort will be made to install meters at facilities already in place and maintained by the District. Deliverables: Map of DMA and pictures of installation process	5/1/19	5/31/19
Task 6: Quantify Water Loss	6/1/19	8/31/19

Utilize existing automated metering infrastructure in combination with SmartWorks software to quantify water loss within DMA. Deliverables: Report highlighting quantity of water loss within the DMA.		
Task 7: Deploy SmartWorks Software Utilize SmartWorks software to pinpoint malfunctioning customer water meters. Deliverables: SmartWorks report and malfunctioning meters list.	9/1/19	6/30/20
Task 8: Replace Customer Meters with New Ultrasonic Meters Replace malfunctioning customer water meters with ultrasonic water meters. Deliverables: List of sites where ultrasonic meters are installed	10/1/19	6/30/20
Task 9: Public Demonstration Develop materials including a summary report and a PowerPoint presentation to be used for demonstrating the benefits of the Proposed Project to neighboring and regional water agencies during a workshop. Deliverables: Summary report and PowerPoint presentation.	10/1/20	12/31/20

There will be no permits, new policies, or administrative actions required for implementation of the Proposed Project, and engineering work will be limited to informal input from RCWD’s Engineering staff as to where production meters installed as part of Task 5 should be installed on existing water distribution pipes. Environmental compliance costs are anticipated to be minimal since no earth-disturbing work is anticipated. These costs have not been discussed with the local Reclamation office, but have been estimated to be ~1% the grant amount requested.

Nexus to Reclamation

The Proposed Project will not take place on Reclamation lands; however, RCWD is associated with Reclamation’s Colorado River Boulder Canyon Project – Hoover Dam. Hoover Dam helps ensure a dependable water supply for municipal, industrial, and other domestic uses in the Metropolitan Water District of Southern California (Metropolitan) service area. As member agencies of Metropolitan, Eastern Municipal Water District and Western Municipal Water District obtain a portion of their imported water from Metropolitan, which distributes that water to RCWD within Reclamation’s Lower Colorado Region. Therefore, the proposed Project will help to make more efficient use of existing water supplies within the Lower Colorado Region. In addition to benefitting water supplies managed by Reclamation, the Proposed Project’s activities benefit local supplies managed by RCWD in partnership with the Pechanga Band of Luiseno Mission Indians.

Department of the Interior Priorities

The Proposed Project shares the following Department of the Interior priorities:

- *Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt*
The Proposed Project utilizes scientifically proven technologies to manage water more efficiently.
- *Utilizing Our Natural Resources*
The Proposed Project saves water and therefore reduces pumping requirements for the conveyance of imported water to southern California. Reducing pumping requirements saves energy and ensures American energy is available to meet our security and economic needs.
- *Restoring Trust with Local Communities*
The Proposed Project’s Public Demonstration component expands the lines of communication with California water agencies regarding shared priorities related to water conservation and efficiency. In addition, the Proposed Project improves public relations by promoting customer equity and keeping water rates low.

- *Striking a Regulatory Balance*
 By decreasing water demands, the Proposed Project helps to reduce the potential for implementation of drought declarations and related regulatory requirements imposed upon industry and private citizens; therefore, the administrative burden of implementing these regulations is reduced.
- *Modernizing our Infrastructure*
 By establishing the District Metered Area and installing ultrasonic water meters, the Proposed Project supports technology improvements made by private industry, and therefore increases the involvement of private industry in the modernization of U.S. infrastructure with the latest water measurement technologies.

II. Project Budget

A. Funding Plan and Letters of Commitment

The Proposed Project will be funded through a combination of grant funding awarded by Reclamation and funding provided by RCWD. No in-kind contributions will be made for the completion of the Proposed Project. The non-Federal cost share for the proposed project is \$86,328.45, or 55% of the total project cost. The entire cost-share will be provided by RCWD and will come from the District’s annual operations budget for District staffing. The source of this budget amounts to nearly \$2,000,000 and is generated by the District’s water sales, monthly service charges, and other revenues. There will be no other sources of funding for the Proposed Project; therefore, no letters of commitment from additional sources are included with this proposal. Moreover, no funding has been requested or received from any other source (including Federal partners) for Proposed Project implementation. The District does not anticipate that any costs will be incurred for the Proposed Project prior to its proposed start date. The following table shows a summary of the Proposed Project’s funding sources.

Funding Sources

Funding Sources	Funding Amount
Non-Federal entities	
Rancho California Water District	\$ 86,328.45
<i>Non-Federal subtotal:</i>	\$ 86,328.45
Other Federal entities	
N/A	\$ 0
<i>Other Federal subtotal:</i>	\$ 0
<i>Requested Reclamation funding:</i>	\$ 70,500.00
<i>Total project funding:</i>	\$ 156,828.45

B. Budget Proposal

Budget Item Description	Computation			Non-Federal Share	Reclamation Share	Total Cost
	Cost	Unit	Quantity			
SALARIES AND WAGES						
Sr. Conservation/Water Budget Analyst	\$ 44.28	per hour	128	\$ 5,667.84	\$ -	\$ 5,667.84
Sr. Water Resources Planner	\$ 58.82	per hour	36	\$ 2,117.52	\$ -	\$ 2,117.52
Director of Administration	\$ 90.43	per hour	4	\$ 361.72	\$ -	\$ 361.72
Field Services Manager	\$ 60.34	per hour	22	\$ 1,327.48	\$ -	\$ 1,327.48
Water Systems Analyst	\$ 56.61	per hour	22	\$ 1,245.42	\$ -	\$ 1,245.42
Water Resources Manager	\$ 75.86	per hour	16	\$ 1,213.76	\$ -	\$ 1,213.76
Field Distribution Operator Foreman- Meter/AMR	\$ 39.24	per hour	160	\$ 6,278.40	\$ -	\$ 6,278.40
Sr. Field Distribution Operator- Meter/AMR	\$ 39.24	per hour	160	\$ 6,278.40	\$ -	\$ 6,278.40
Sr. Accounting Analyst	\$ 39.33	per hour	16	\$ 629.28	\$ -	\$ 629.28
Utility Analyst	\$ 43.44	per hour	12	\$ 521.28	\$ -	\$ 521.28
<i>SUBTOTAL</i>				\$ 25,641.10	\$ -	\$ 25,641.10
FRINGE BENEFITS						
	<i>Basis</i>	<i>% of Basis</i>				
As per Federally approved Indirect Cost Rate Agreement, 83.39% of Salaries & Wages	\$ 25,641.10	83.39%	1	\$ 21,382.11	\$ -	\$ 21,382.11
<i>SUBTOTAL</i>				\$ 21,382.11	\$ -	\$ 21,382.11
TRAVEL						
None						
EQUIPMENT						
Production Meters	\$ 12,000.00	per meter	2	\$ -	\$ 24,000.00	\$ 24,000.00
Ultrasonic Meters	\$ 775.00	per meter	60	\$ -	\$ 46,500.00	\$ 46,500.00
<i>SUBTOTAL</i>				\$ -	\$ 70,500.00	\$ 70,500.00
SUPPLIES/MATERIALS						
None						
CONTRACTUAL/CONSTRUCTION						
None						
ENVIRONMENTAL & REGULATORY COMPLIANCE						
Environmental & Regulatory Compliance Costs (~1% of Total Project Cost)	\$ 1,600.00	per review	1	\$ 1,600.00	\$ -	\$ 1,600.00
<i>SUBTOTAL</i>				\$ 1,600.00	\$ -	\$ 1,600.00
OTHER						
None						\$ -
TOTAL DIRECT COSTS				\$ 48,623.21	\$ 70,500.00	\$ 119,123.21
APPROVED INDIRECT COSTS*						
	<i>Basis</i>	<i>% of Basis</i>				
As per Federally approved Indirect Cost Rate Agreement, overhead for G&A and V&E, 147.05% of Salaries & Wages	\$ 25,641.10	147.05%	-	\$ 37,705.24	\$ -	\$ 37,705.24
<i>SUBTOTAL</i>				\$ 37,705.24	\$ -	\$ 37,705.24
TOTAL INDIRECT COSTS				\$ 37,705.24	\$ -	\$ 37,705.24
TOTAL PROJECT COSTS				\$ 86,328.45	\$ 70,500.00	\$ 156,828.45

*Indirect costs were calculated on a per permanent, full-time employee basis according to the rate paid to each employee and the number of hours worked on the Proposed Project. These hours include those in the "Salary & Wages" category of the Project Budget.

C. Budget Narrative

Salaries & Wages

Tyson Heine, RCWD's Senior Conservation and Water Budget Analyst, will act as Project Manager for the Project. Mr. Heine has experience with managing projects funded by the US Bureau of Reclamation including various research and demonstration projects focused on exploring opportunities for water use efficiency improvements in both urban and agricultural settings. Also involved in completing the Proposed Project are the Sr. Water Resources Planner, Director of Administration, Field Services Manager, Water Systems Analyst, Water Resources Manager, Field Distribution Operator Foreman-Meter/AMR, Sr. Field Distribution Operator- Meter/AMR, Sr. Accounting Analyst, and Utility Analyst. Although salary increases are possible for these positions starting in December of 2018, a salary survey is currently underway and the amount of the potential increases are uncertain. Therefore, hourly rates

included as part of the project budget do not account for increases. Following is a table that shows the direct labor rates, not including a fringe rate or fringe cost, for each of the personnel who will work on the Proposed Project. In addition, estimated hours, percent of time, and total cost (i.e. salaries and wages) are shown for each position.

Labor Rates & Costs

Position Name	Hourly Rate	Estimated Hours	% of Time	Computation	Salaries & Wages
Sr. Conservation/Water Budget Analyst	\$ 44.28	128	6.2%	Rate of Comp. X Est. Hours	\$ 5,667.84
Sr. Water Resources Planner	\$ 58.82	36	1.7%	Rate of Comp. X Est. Hours	\$ 2,117.52
Director of Administration	\$ 90.43	4	0.2%	Rate of Comp. X Est. Hours	\$ 361.72
Field Services Manager	\$ 60.34	22	1.1%	Rate of Comp. X Est. Hours	\$ 1,327.48
Water Systems Analyst	\$ 56.61	22	1.1%	Rate of Comp. X Est. Hours	\$ 1,245.42
Water Resources Manager	\$ 75.86	16	0.8%	Rate of Comp. X Est. Hours	\$ 1,213.76
Field Distribution Operator Foreman- Meter/AMR	\$ 39.24	160	7.7%	Rate of Comp. X Est. Hours	\$ 6,278.40
Sr. Field Distribution Operator- Meter/AMR	\$ 39.24	160	7.7%	Rate of Comp. X Est. Hours	\$ 6,278.40
Sr. Accounting Analyst	\$ 39.33	16	0.8%	Rate of Comp. X Est. Hours	\$ 629.28
Utility Analyst	\$ 43.44	12	0.6%	Rate of Comp. X Est. Hours	\$ 521.28
				TOTAL	\$ 25,641.10

Each of the personnel involved in the Proposed Project will work on Tasks outlined in the Work Plan that are specific to their area of expertise. Following is a table that provides information explaining the number of hours that will be spent by each RCWD employee on each of the tasks described in the on page 9 and 10 of this proposal (Proposed Project Tasks).

Hours per Task per RCWD Employee & Associated Costs

Position Name	Task									Total Hours	Hourly Rate	Total Cost
	1	2	3	4	5	6	7	8	9			
	Hours											
Sr. Conservation/Water Budget Analyst	12	32	6	6	4	20	40	0	8	128	\$ 44.28	\$ 5,667.84
Sr. Water Resources Planner	12	16	0	0	0	0	0	0	8	36	\$ 58.82	\$ 2,117.52
Director of Administration	4	0	0	0	0	0	0	0	0	4	\$ 90.43	\$ 361.72
Field Services Manager	0	0	8	8	6	0	0	0	0	22	\$ 60.34	\$ 1,327.48
Water Systems Analyst	0	0	8	8	6	0	0	0	0	22	\$ 56.61	\$ 1,245.42
Water Resources Manager	0	0	8	8	0	0	0	0	0	16	\$ 75.86	\$ 1,213.76
Field Distribution Operator Foreman- Meter/AMR	0	0	8	8	50	0	0	94	0	160	\$ 39.24	\$ 6,278.40
Sr. Field Distribution Operator- Meter/AMR	0	0	8	8	50	0	0	94	0	160	\$ 39.24	\$ 6,278.40
Sr. Accounting Analyst	16	0	0	0	0	0	0	0	0	16	\$ 39.33	\$ 629.28
Utility Analyst	0	0	2	0	0	4	6	0	0	12	\$ 43.44	\$ 521.28
										TOTAL	\$ 25,641.10	

Estimated hours spent by RCWD staff for compliance with reporting requirements are included in the preceding table under Task 2. Costs for Administrative and/or Clerical personnel are not included in the preceding table and are included as a portion of the Proposed Project's indirect costs.

Fringe Benefits

Fringe Benefits costs are equal to 83.39% of the total cost for Salary & Wages. A Federally approved rate agreement is available upon request, which provides support for this method of calculation.

Travel

There will be no travel expenses accrued as part of the Proposed Project

Equipment

Production Meters and Ultrasonic Meters were included as line items under "Equipment" in the budget table. Based upon quotes by manufacturers, each line item is valued in excess of \$5,000. The equipment is fundamental to the goals of the Proposed Project. Without accurate metering, District staff will not be able to accurately quantify and reduce water loss.

Materials and Supplies

Materials such as paper and ink are included as indirect costs. No other materials and/or supplies are required for the Proposed Project.

Contractual

No contractual agreements will be made for implementation of the Proposed Project.

Environmental and Regulatory Compliance

A line item was included in the Project Budget under the "Environmental & Regulatory Compliance" category to account for any potential environmental and/or regulatory compliance costs. This line item is for \$1,600.00 and is equal to just over 1% of the total Project Budget. It is anticipated that Environmental and Regulatory Compliance Costs associated with the Proposed Project will be minimal.

Other Expenses

No other expenses are expected for completion of the Proposed Project.

Indirect Costs

RCWD had an indirect cost rate approved through the U.S. Department of the Interior's National Business Center in 2017. A copy of the most recently updated, federally approved Indirect Cost Rate Agreement is available upon request. The following table lists the approved rates:

Indirect Cost Type	Approved Rate
Vehicle and Equipment Overhead	8.01%
General and Administrative Overhead	139.04%
Engineering Overhead	93.54%
Operations & Maintenance Overhead	21.89%

For the Proposed Project, Vehicle and Equipment Overhead and General and Administrative Overhead applies, and was accounted for in the Project Budget. These indirect costs were calculated on a per permanent, full-time employee basis according to the rate paid to each employee and the number of hours worked on the Proposed Project. These hours include those in the "Salary & Wages" category of the Project Budget.

D. Total Costs

The following table shows total project costs, including the Federal and non-Federal cost-share amounts.

Cost Share Amounts

Total Project Cost	Non-Federal Share	Non-Federal Cost Share %	Reclamation Share	Reclamation Cost Share %
\$156,828.45	\$ 86,328.45	55%	\$ 70,500.00	45%

III. Environmental and Cultural Resources Compliance

The Proposed Project is a water management effort that will result in the development of a DMA within RCWD’s service area. No environmental and regulatory issues are posed through its implementation. Following are answers to questions provided in the Funding Opportunity Announcement.

1. Proposed Project activities do not include any surface disturbance, nor do they impact the surrounding environment (i.e. soil [dust], air, water [quality and quantity], animal habitat).
2. RCWD is not aware of any species listed or proposed to be listed as a Federal endangered or threatened species, or designated Critical Habitat in the Project site area.
3. There are no wetlands or other surface waters inside the Project boundaries that potentially fall under the Federal Clean Water Act jurisdiction as “Waters of the United States.”
4. The majority of the water delivery system was constructed by the late 1980s; however, some infrastructure continues to be constructed today as the service area is being built out.
5. No modifications of, or effects to, individual features of an irrigation system will be made.
6. There are no buildings, structures, or features listed or eligible for listing on the National Register of Historic Places within the Project site. There are, however, at least 10 buildings in the Old Town Historic District of the City of Temecula, which is within the RCWD service area. These buildings are in the well-developed Old Town area and the Proposed Project would not affect them.
7. There are no known archaeological sites in the Project area.
8. The Proposed Project will not have a disproportionately high and adverse effect on low income or minority populations.
9. The Proposed Project will not limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands.
10. The Proposed Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

IV. Required Permits or Approvals

The Proposed Project requires no permits or approvals from any Federal, State, or local agencies.

V. Official Resolution

Because of the timing of RCWD’s Board Meetings, an official Resolution is not available at this time. However, one will be submitted to Reclamation by August 30, 2018.

VI. Unique Entity Identifier and System for Award Management

RCWD is registered in the System for Award Management under the number 053836235, and will continue to maintain active registration.

VII. Letters of Project Support

Following are letter of project support provided by Eastern Municipal Water District and Western Municipal Water District, RCWD's two water wholesalers.



June 19, 2018

Jeff Armstrong, General Manager
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590

Subject: Rancho California Water District Plans to Conduct a District Metered Area Program

Dear Mr. Armstrong:

Eastern Municipal Water District (EMWD) supports Rancho California Water District's (RCWD) plans to conduct a District Metered Area Program (Program), which will help to identify and reduce water loss within RCWD's service area.

EMWD understands that the purpose of the Program would be to create a permanent water loss control system in order to quantify, identify, and mitigate water loss within the network. As water systems continue to age and the state is trending towards further regulation of water losses, a proactive approach to water loss detection and asset management would be beneficial to RCWD.

EMWD also understands that the goals of the Program are to:

- Quantify water loss within the established District Metered Area (DMA)
- Identify and eliminate sources of apparent water loss
- Evaluate assets

The proposed Program represents a significant effort by RCWD to use best practices for managing water resources and assets efficiently.

Sincerely,

Elizabeth Lovsted, P.E.
Director of Water Supply Planning

Board of Directors
David J. Slawson, President Ronald W. Sullivan, Vice President Joseph J. Kuebler, CPA, Treasurer Philip E. Paule Randy A. Record

2270 Trumble Road • P.O. Box 8300 • Perris, CA 92572-8300
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Craig D. Miller
General Manager

Robert Stockton
Division 1

Thomas P. Evans
Division 2

Brenda Dennstedt
Division 3

Donald D. Galleano
Division 4

S.R. "Al" Lopez
Division 5



Securing Your Water Supply

June 19, 2018

Mr. Jeff Armstrong, General Manager
Rancho California Water District
42135 Winchester Rd
Temecula, CA 92590

RE: Rancho California Water District – District Metered Area Program
Position: SUPPORT

Dear Mr. Armstrong,

Western Municipal Water District (WMWD) supports Rancho California Water District's (RCWD) plans to conduct a District Metered Area Program (Program), which will help to identify and reduce water loss within RCWD's service area.

WMWD understands that the purpose of the Program would be to create a permanent water loss control system in order to quantify, identify, and mitigate water loss within the network. As water systems continue to age and the state is trending towards further regulation of water losses, a proactive approach to water loss detection and asset management would be beneficial to RCWD.

WMWD also understands that the goals of the Program are to:

- Quantify water loss within the established District Metered Area (DMA)
- Identify and eliminate sources of apparent water loss
- Evaluate assets

The proposed Program represents a significant effort by RCWD to use best practices for managing water resources and assets efficiently.

Very Respectfully,

A handwritten signature in blue ink, appearing to read "Craig D. Miller".

CRAIG D. MILLER, P.E.
General Manager

The area affected by the Proposed Project will be the Rancho California Water District's service area, located in Temecula, CA, Riverside County. The service area is within Reclamation's Lower Colorado Region.

